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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,510	01/12/2006	Yasuo Masuda	SHIGA7.036APC	8841
29995 7590 04/24/2008 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614				
EXAMINER				
CHU, JOHN S Y				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
04/24/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com  
eOAPilot@kmob.com

### Office Action Summary

**Application No.**

10/564,510

**Applicant(s)**

MASUDA ET AL.

**Examiner**

JOHN S. CHU

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

This Office action is in response to the RCE April 10, 2008.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

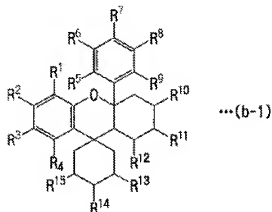
2. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over UEDA et al (6,210,855) in view of UETANI et al (5,424,167 and 5,290,657).

The claims are drawn to the following:

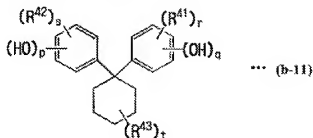
1. **(Previously Presented)** A positive photoresist composition comprising:

(A) an alkali-soluble novolak resin having a weight average molecular weight of 1,000 to 50,000, in which a portion of hydrogen atoms of phenolic hydroxyl groups are substituted with 1,2-naphthoquinonediazidesulfonyl groups; and

(B) a dissolution promoter comprising at least one compound selected from the group consisting of compounds represented by a general formula (b-1) and a general formula (b-11) shown below:



wherein,  $R^1$  to  $R^9$  each represent, independently, a hydrogen atom, an alkyl group, a halogen atom, or a hydroxyl group, although at least one of  $R^1$  to  $R^9$  represents a hydroxyl group; and  $R^{10}$  to  $R^{15}$  each represent, independently, a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group or an aryl group;

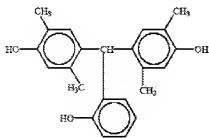


wherein,  $R^{41}$  to  $R^{43}$  each represent, independently, a lower alkyl group, a cycloalkyl group or a lower alkoxy group; p and q each represent an integer from 1 to 3; and r, s and t each represent either 0, or an integer from 1 to 3.

New claim 9 has been added.

9. (New) The positive photoresist composition according to claim 1, formed into a resist pattern on a substrate, wherein said resist pattern is at least 3  $\mu\text{m}$  in thickness.

UEDA et al discloses positive resist compositions comprising a photosensitive novolak resin having a weight average molecular weight of 2,000 - 20,000 wherein 2.5 - 27% of the hydroxyl groups are replaced with 1,2-naphthoquinonediazidesulfonyl groups. This disclosure meets the claimed component (A) as claimed in claim 1. For component B, a low molecular weight aromatic compound having phenolic hydroxyl groups and 2-20 benzene rings are disclosed in UEDA et al. The non-limiting examples of the aromatic compounds are listed in column 8, line 35 - column 16, line 25. Of particular interests by the examiner is the compound of C-21 in column 11, lines 25-34 seen here:



This compound is the same low molecular weight compound (c) as found in UETANI et al (5,424,167), see column 7, lines 49-56 of UETANI et al.

UETANI et al (5,424,167) discloses a dissolution promoter of claimed formula (b-11). This reference clearly teaches the functional equivalence of four phenolic compounds as an additive for photoresist composition comprising 1,2-naphthoquinonediazidesulfonyl groups, see column 7, lines 49-56 for the representative compounds. And apparently formulae (a) - (c) in UETANI et al meet compound (b-11) as claimed. To the skilled artisan knowing the available additive phenolic compounds in the art and seeing UETANI et al ('167) one of ordinary skill would expect that any of the those compounds listed in UETANI et al would function similarly in UEDA et al without changing the improved results of high resolution, heat resistance, dimensional control and film retention .

Likewise UETANI et al (5,290,657) disclose a phenolic dissolution inhibitor compound as an additive to quinone diazide-based photoresist compositions. The use of an aromatic compound having phenolic hydroxyl groups is directed by the art of UEDA et al such that any of the phenolic additives in the art of photoresist having the requirements as taught by UEDA et al would be expected to perform in the manner as desired wherein sensitivity, high resolution and dimensional control are required. Thus the use of the phenolic additive in UETANI et al ('567) would be expected to function similarly in the composition of UEDA et al while maintaining the beneficial properties of high resolution, improved dimensional control, heat resistance and film thickness retention.

It would have been *prima facie* obvious to one of ordinary skill in the art of photoresist composition to use compounds (a) - (c) of UETANI et al in the composition of UEDA et al as

the aromatic compound having 2 phenolic hydroxyl groups and reasonably expect same or similar results as disclosed in UEDA et al.

It also would have been *prima facie* obvious to one of ordinary skill in the art of photoresist compositions to use the additive compound in UETANI et al ('567) as the low molecular aromatic compound having phenolic hydroxyl groups and reasonably expect same or similar results as disclosed in UEDA et al for high resolution, improved dimensional control and film retention.

New claim 9 has been considered, however the claim recites an intended use of the *prima facie* obvious composition which is given no patentable weight and is rejected over the prior art references above.

Claims drawn to a coated substrate having the desired photoresist thickness and/or a method which recites coating a certain thickness on a substrate may be helpful in overcoming the rejection.

The comparative evidence would be seen as probative to claims that are commensurate in scope to the comparative evidence( i.e. reciting the particular thickness of the coated resist). It is reasserted that a *prima facie* case of obviousness has been made in view of the prior art of UEDA et al, UETANI et al ('167 and '657).

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John S. Chu/  
Primary Examiner, Art Unit 1795

J.Chu  
April 16, 2008